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TRANSCRIPT OF PROCEEDINGS

NASA/JPL CERCLA RPM MEETING

January 20, 2005

4800 Oak Grove Drive

Pasadena, California 91109

1	APPEARANCES :	
2	NAME	AFFILIATION
3	STEVE SLATEN	NASA
4	KEITH FIELDS	NASA/BATTELLE
5	DAVID CLEXTON	NASA/BATTELLE
6	MARK RIPPERDA	USEPA (Via Phone)
7	JUDY NOVELLY	JPL
8	CHUCK BURIL	JPL
9	GARY TAKARA	PASADENA WATER & POWER
10	ALAN SORSHER	CA DHS
11	MERRILEE FELLOWS	NASA
12	INNA BABBITT	PASADENA WATER & POWER
13	RICHARD COFFMAN	DEPT. OF TOXIC SUBSTANCES
14	MICHEL ISKAROUS	DEPT. OF TOXIC SUBSTANCES
15	NICK AMINI	NASA/BATTELLE
16	KAREN ARTEAGA	GEOSYNTEC
17	LINDA THOMAS	FOOTHILL MUNICIPAL WATER DISTRICT
18	MYRNA GUTIERREZ	NASA/Battelle
19	JAMES KO	CA DHS
20	JOHN SCHUMACHER	RUBIO CAÑON
21	ALSO PRESENT :	
22	EILEEN O'TOOLE, HEARING REPORTER	
23		
24		
25		

1           Pasadena, California, Thursday, January 20, 2005

2                               9:42 a.m.

3

4           MS. FELLOWS:   Why don't we start introducing and  
5   spelling names for the reporters.

6           MR. SLATEN:    Okay.   Why don't we start that, then.  
7   And people that come in, I'll ask them to add to it.

8                               Okay.   Do we want to -- where do we want to  
9   start?

10          MS. BABBITT:   Inna Babbitt, I-n-n-a B-a-b-b-i-t-t,  
11   City of Pasadena.

12          MR. SORSHER:   Alan Sorsher, A-l-a-n S-o-r-s-h-e-r,  
13   California Department of Health Services.

14          MR. TAKARA:    Gary Takara, G-a-r-y T-a-k-a-r-a,  
15   City of Pasadena.

16          MR. BURIL:     Chuck B-u-r-i-l, JPL.

17          MR. COFFMAN:   Richard Coffman, C-o-f-f, as in Frank,  
18   -m-a-n, Department of Toxic Substances Control.

19          MR. ISKAROUS:   Michael Iskarous, I-s-k-a-r-o-u-s.

20          MS. FELLOWS:   Do you want to spell your first name  
21   too?

22          MR. ISKAROUS:   Michel, M-i-c-h-e-l, no "A,"  
23   Department of Toxic Substances.

24          MR. SLATEN:    Steve Slaten, S-l-a-t-e-n, NASA.

25                               Name and affiliation.

1 MR. AMINI: Nick Amini, A-m-i-n-i, with Battelle.

2 MR. ARTEAGA: Karen Arteaga, Karen with a "K,"

3 A-r-t-e-a-g-a, GeoSyntec Consultants.

4 MS. THOMAS: Linda Thomas, T-h-o-m-a-s, Foothill Municipal

5 Water District.

6 MR. FIELDS: Keith Fields with Battelle, F-i-e-l-d-s.

7 MS. FELLOWS: Merrilee Fellows with NASA.

8 M-e-r-r-i-l-e-e, Fellows, F-e-l-l-o-w-s.

9 MS. GUTIERREZ: Myrna Gutierrez, Myrna, M-y-r-n-a,

10 Gutierrez, G-u-t-i-e-r-r-e-z, consultant to NASA.

11 MR. CLEXTON: David Clexton with Battelle.

12 C-l-e-x-t-o-n.

13 MS. NOVELLY: Judy Novelly with JPL, N-o-v-e-l-l-y.

14 MR. KO: James Ko, J-a-m-e-s, Ko, K-o, DHS,

15 Los Angeles.

16 MR. SCHUMACHER: John Schumacher, S-c-h-u-m-a-c-h-e-r,

17 Rubio Cañon Land and Water Association.

18 MS. FELLOWS: For those of you who speak from the back

19 of the room, make sure you're loud because we have to hear

20 over the projector.

21 MR. SLATEN: And Mark Ripperda is joining us by

22 conference call.

23 Okay. Merrilee, do you want to do the usual

24 first part of it?

25 MS. FELLOWS: Sure. Except I got usurped by the tour.

1           Okay. This is the beginning. This is taken on  
2   January 11th, up at Devil's Gate at the Woodbury overlook.

3           And some of the things that we've been doing in  
4   the last -- particularly the last couple of weeks, we have  
5   just updated our web page yesterday to reflect the National  
6   Academy study. A lot of people have been calling and  
7   asking for copies and links, so we put not only the study  
8   on there but their webcast of their press announce briefing  
9   and their press release, and also put links to the  
10  perchlorate page, EPA and DHS. And that was it.

11          And one of the things that we are planning is the  
12  community involvement session. This is a little bit  
13  different than a public meeting. This is -- we're going to  
14  use the Elliott Middle School cafeteria, so it's a very,  
15  very large room, and we'll have large tables with displays,  
16  with refreshments in the middle, and people can kind of  
17  move around from display to display. We'll have each of  
18  those staffed.

19          The idea is to give a chance for the people that  
20  have concerns and questions that don't like to ask  
21  questions in public and we just kind of talk to them one on  
22  one as they move around the room.

23          We'll have some fact sheets available, including  
24  the newsletter I'll get to in a minute -- a fact sheet on  
25  well-head treatment, just how it works, and probably one on

1 frequently asked questions, just kind of handouts for  
2 people to take home.

3           Then the displays (inaudible), this is still  
4 being developed, but the site history, the one we used  
5 before, is slightly updated and revised -- I shouldn't say  
6 updated because history is history -- but revised a little  
7 bit.

8           And then two -- two examples of displays of how  
9 we're cleaning up groundwater further out with ion exchange  
10 and then one here with fluidized bed reactor.

11           And we'll have a display talking about what we're  
12 doing to define the extent of the plume, including  
13 monitoring and the isotope analysis.

14           The community outreach mechanism is going to be  
15 basically ways that people can contact us; the web page  
16 and e-mails and just a variety of things that we do. It's  
17 not so much to say what we do going out to people, but how  
18 they can reach us to make sure if they have questions, what  
19 to do.

20           And then one -- we're talking about doing one  
21 with JPL's (inaudible) activities, solution and plans.  
22 This is just in the early stages.

23           So if anybody has a thought about another  
24 display, we're early enough on that we could consider some  
25 additional ideas. Okay.

1           MR. SORSHER: Is the other one further out, you said  
2 the second?

3           Just a thought: I participated in something like  
4 this years ago in relation to BKK landfill in West Covina,  
5 and I think we had it on a Saturday morning. It went from,  
6 you know, mid morning to early afternoon. And it was kind  
7 of nice having -- doing it on Saturday because, you know,  
8 people would bring the kids out, and, you know, it was  
9 really well received.

10          MS. FELLOWS: That's interesting, but our data shows  
11 it's better to have it on weeknights than on Saturdays,  
12 but -- we're kind of locked in on the date, but I'll bring  
13 that up, and also maybe for our next one we'll try that  
14 just to see if we get more interest because the people who  
15 have jobs, it's nice to alternate a little bit.

16          MR. SORSHER: People, you know, they're working during  
17 the week, and they're tired; they don't want to go out at  
18 night, you know.

19          MS. FELLOWS: The Community Information Session is more  
20 amenable to kids walking around and learning from it. That's a  
21 good idea.

22                 We've got a newsletter coming out, hopefully, in  
23 early February. We're slipping a little bit just because  
24 we have to get NASA headquarters' approval on everything,  
25 and they've been out for the inauguration this week. Just

1 a lot going on.

2 Right now, it's planned to be a four-page  
3 newsletter; could shorten to two, but probably stick with  
4 this.

5 Project updates and that's the OU-1 project here  
6 that we'll be talking about. Hopefully, it will go to  
7 press just about the time we know it's operating so we can  
8 have that as the headline.

9 We'll also identify the fact that the Community  
10 Information Session is scheduled. And behind it there is  
11 the newsletter we used last year, and on the front page we  
12 had the thing same, "Here Comes the Community Outreach" so  
13 we'll have something on the outside mailer. And then it  
14 says "Community Information Session coming" and a couple of  
15 things.

16 We will also be following up with advertisements  
17 in the papers on the -- on the Community Information  
18 Sessions, as well as this early -- kind of early  
19 mark-the-date kind of thing, and then a reminder with the  
20 advertisements later.

21 We'll talk about the isotope analysis, and we'll  
22 have a short article on updating the administrative record,  
23 what we've done to streamline that to go to the compact  
24 disc and things that we talked about at the earlier  
25 meeting.



1                   We also got some community involvement interviews  
2   scheduled as part of the CERCLA requirement we have to  
3   update the Community Involvement Plan. And we finished the  
4   multicultural interviews that Myrna was very instrumental  
5   in, and those came out well that were done. Now, we're  
6   just trying to get a little broader variety of people.

7                   The group here we're going to be talking to next  
8   week, Tim Brick is a director of the Metropolitan Water  
9   District and an environmentally active person on water  
10  issues here.

11                  Amy Posner is a JPL employee, as is  
12  Cynthia Compton.

13                  Cynthia Compton made a couple of  
14  comments in the public information sessions before, so I  
15  got her name from that because I knew she had concerns, and  
16  I thought that would be a good person to talk to.

17                  Michelle Zack is very active in the local  
18  watershed issues area.

19                  Ron Cyger is president of the Audubon Society in  
20  Pasadena.

21                  Melody Comfort was another woman who spoke and  
22  has an active interest, particularly in students. She's  
23  active on the PTA board in town but just interested in  
24  water quality and water concerns.

25                  And Vice Mayor Tyler, who is head of the

1 municipal services community of the City Council, so he's  
2 the one that's the chair of the utility function, I guess.

3 If anybody has ideas on other people we should  
4 talk to there, I'd be happy to consider those.  
5 These were just ones that I kind of thought of. I didn't  
6 want to stack it all toward hearing favorable things. I  
7 tried to get people that have asked those tough questions  
8 that we've had to answer as well.

9 MR. TAKARA: Excuse me. Merrilee, what is the intent  
10 of this interviewing? I kind of missed -- what was the  
11 goal of it?

12 MS. FELLOWS: Well, it's two things. One, the  
13 ultimate goal is to update our Community Involvement Plan.  
14 The kinds of questions we asked them are: "How much do you  
15 know about this?" "Are you learning enough from us?" "Are  
16 we doing it in the right methods?" "Do you have better  
17 ways that you can suggest through, either your own little  
18 groups that you know about, or the broader community of how  
19 we should be reaching them?" Basically to ensure that the  
20 community knows about this and that we have their views on  
21 how best to reach them.

22 MR. TAKARA: I see.

23 MS. FELLOWS: So, you know, when I ask people if  
24 they'll talk to us, they all feel that they have to do  
25 their homework or read our web page, and they don't really.

1 We really want them without doing preparation, just kind of  
2 "Are we reaching you?" Ask that you make the extra effort  
3 to --

4 MR. TAKARA: Is there a reason why someone like  
5 Joyce Streater wouldn't be included or --

6 MS. FELLOWS: Oh, we've already met with her.

7 MR. TAKARA: Oh, you did. I see.

8 MS. FELLOWS: Got some other --

9 MR. TAKARA: No. No. No. That's the name that just  
10 became apparent to me.

11 MS. FELLOWS: And she wasn't exactly in our  
12 multicultural interviews, but at the same time we had her  
13 up here for a visit with Phyllis Currie, so we asked them a  
14 lot of those same questions as we were touring around.

15 MR. TAKARA: All right.

16 MS. FELLOWS: And thanks to Pasadena. They had an  
17 article in the "In Focus" that's on the web now. I can send  
18 you the web link to it, but this is their article blown up  
19 a little bit so our plant looks a little sick, but it looks  
20 fine in the actual publication.

21 MR. BURIL: I thought we'd get that picture.

22 MR. TAKARA: They're going satellite.

23 MS. FELLOWS: I took it to the zoom up from the mesa.

24 MR. BURIL: Really?

25 MR. SLATEN: That looks like it had to come from --

1           MR. BURIL: From a helicopter.

2           MR. SLATEN: -- an airplane. That -- that angle

3       can't --

4           MS. FELLOWS: Maybe it was yours.

5           MR. SLATEN: That's an aerial photo.

6           MS. ARTEAGA: It says "Photo" --

7           MS. FELLOWS: Yeah. I think --

8           MR. SLATEN: Does it?

9           MS. FELLOW: I think I took it from the mesa.

10                   Oh, actually, I took it -- how did we get that

11       picture?

12           MR. BURIL: I asked --

13           MS. BABBITT: It says here.

14           MS. FELLOWS: I'll have to look through my photos.

15       That's a very good question.

16           MR. FIELDS: That's coming from the other direction.

17           MR. TAKARA: Yeah. That's coming from downhill.

18           MR. SLATEN: That's looking from the south --

19       southeast, and it's at an --

20           MR. TAKARA: That's right.

21           MS. FELLOWS: Yeah. I've never taken that.

22                   All right. When did you guys get online? I

23       don't know. That's a great question, and it's a picture we

24       should have more of.

25           MR. TAKARA: It's touched up a little.

1 MS. FELLOWS: As you note that it says, "With support  
2 from Pasadena Water and Power" indicated here, so thanks  
3 very much for your support.

4 MR. SLATEN: Moral support -- we've been getting moral  
5 support.

6 MR. TAKARA: Glad to help. I don't know what we did,  
7 but I'm glad we helped.

8 MS. FELLOWS: Next.

9 Just Pasadena, again, Water and Power, and Tim  
10 Brick had a celebration of the success of their museum  
11 water exhibit. It was wonderful.

12 The event was great. The exhibit was fantastic.  
13 I asked around for some of the displays because we'd like to  
14 use them at our Community Information Session, and he was  
15 not sure where they were going to go, so if you guys know,  
16 I'd like to grab some of those, at least use them once, if  
17 not a lot.

18 Next.

19 Just thought I'd show you a picture of the  
20 spreading basins with water in them. I actually sent this  
21 picture to Phyllis Currie, and she forwarded it to the  
22 City Manager, who asked if they could put it in the City  
23 Council package because they'd never seen the -- some of  
24 them had never seen the spreading basins with water in  
25 them. And, of course, it's easier for me to get up to the

1 mesa to take pictures. You guys, any time you want to come  
2 and take some pictures, we'll help you out.

3 MR. TAKARA: Thanks.

4 MS. FELLOWS: And you can see the mud on Johnson field  
5 back here. I have some better pictures, but it's totally  
6 filled with mud. Still, I think.

7 MR. SLATEN: And that was before the last big rain.

8 MS. FELLOWS: Yeah. This was December 30th.

9 Next.

10 That was at the peak.

11 MR. BURIL: Was that the spillway?

12 MR. SLATEN: That was really impressive looking in  
13 person. I looked at the hydrograph online, and it was  
14 almost 4,000 cubic feet per second when it was at its max  
15 that Sunday afternoon.

16 MR. TAKARA: That's a lot of water.

17 MS. FELLOWS: It was amazing.

18 Next.

19 That's another picture showing the water, again,  
20 from the same Woodbury overpass, looking back toward JPL.  
21 And snow in the background.

22 That's it.

23 So any questions on -- Mark, do you have any  
24 questions?

25 MR. RIPPERDA: No, I don't.

1           MR. SLATEN: You should see the pictures.

2           MS. FELLOWS: He does. He has them.

3           MR. SLATEN: Okay. For the rest of our meeting today,  
4 we're going to go over some of the usual stuff and give  
5 everybody an update starting with OU-3.

6                   Bob Hayward is out and wasn't able to be here  
7 today, but he gave me some information, so I'm passing  
8 along some information he gave to me.

9                   His system is working and working well.  
10 Lincoln Avenue No. 3 has been operating around the clock.  
11 Lincoln Avenue No. 5 apparently has not been needed all the  
12 time, especially during all the rain, although they turned  
13 it back on, apparently now as the backup. So it's the one  
14 that's turned on as needed.

15                   They were having solids coming into the treatment  
16 system, into the ion exchange, and so they went ahead and  
17 installed bag filters to filter out the solids in front of  
18 the treatment system.

19                   You got some of the concentrations from him.  
20 That influent concentration overall is 18 parts per  
21 billion. The wellhead No. 3 is 31, and No. 5 is 5.8.

22                   And we're seeing the low levels, the levels of  
23 carbon tetrachloride, as you see up there, nondetect right  
24 now in No. 5.

25                   And it's working. The system's working.

1           They also completed the Calaveras Reservoir  
2   connection, the first phase, where they can transfer over  
3   to the City of Pasadena now. They're running at 315  
4   gallons per minute on the first phase connection, and  
5   they're working the second phase connection to be able to  
6   get that up to 600 gallons per minute over the next few  
7   months.

8           MS. BABBITT: The detection limit, is it 4, or is it  
9   less than --

10          MR. SLATEN: For -- for perchlorate? The EPA method  
11   detection limit is 4.

12          MS. BABBITT: Okay.

13          MR. FIELDS: Depending on the lab, you can -- some  
14   can be lower. So we haven't seen the analytical report.

15          MR. SLATEN: But we expect the ion exchange -- we're  
16   always told the ion exchange can work to well less than the  
17   detection limit.

18          MR. TAKARA: Steve, by any chance, is Bob going to --  
19   did he elaborate on what's phase two?

20          MR. SLATEN: Yeah. It's --

21          MR. TAKARA: I never heard of this phase two operation.

22          MR. SLATEN: Okay. What I hear is it is a four-inch  
23   pipe that he wants to replace with an eight-inch pipe is  
24   what I hear.

25                 Let me see if I have anything else in my notes on



1     that.

2             MR. TAKARA:   An eight-inch --

3             MR. SLATEN:   Yeah.   The four-inch pipe to an

4     eight-inch pipe across Fair Oaks Avenue to increase the

5     Calaveras slope.

6             MR. TAKARA:   You don't need eight inch for 600 gallons

7     per minute.   That's huge.

8             MR. SLATEN:   All right.   And I could have gotten some

9     of the message -- you know, I'm kind of passing -- I'm the

10    messenger here, so I could have gotten some things wrong.

11            MR. FIELDS:   What's the size of the current

12    connection?

13            MR. TAKARA:   Four inch.

14            MR. FIELDS:   That you just completed?

15            MR. TAKARA:   Right.

16            MR. FIELDS:   So it's 315 GPM?

17            MR. TAKARA:   Now, that's down significantly.

18            MR. FIELDS:   Yeah.   You could get a lot more than 315.

19    Maybe he's putting another connection within his system to

20    get more water over there --

21            MR. TAKARA:   Maybe he's revising his --

22            MR. FIELDS:   Right.

23            MR. SLATEN:   But in the -- I mean, I'll facilitate,

24    you know, getting the information, if you want to, if you

25    want to get with them or something.

1           MR. TAKARA: I can check with them. I'm just -- when  
2 you were mentioning this phase two, I was just wondering if  
3 you're going to be punching another hole into our  
4 reservoirs.

5           MS. FELLOWS: Without telling us.

6           MR. TAKARA: Yeah.

7           MR. SLATEN: Bob wouldn't do that.

8                    Okay. The big thing on our plate is discussions  
9 between NASA and the City of Pasadena regarding the  
10 Monk Hill system proposal, to put in a large volume  
11 treatment system at Pasadena in the Monk Hill, and we're  
12 working on that. I'm optimistic that we're going to be  
13 able to reach agreement on that reasonably soon.

14                   Sunset wells, Gary, I put you on there for an  
15 update. What's going on at Sunset?

16           MR. TAKARA: Last -- I think the last meeting we had,  
17 I think Alan kind of wanted to get some updates to what was  
18 going on with our Sunset Reservoir wells.

19                   For you -- for some of you who are not familiar  
20 with our facilities, the Sunset Reservoir wells are located  
21 on the southwestern edge of the city near Mountain and the  
22 210 Freeway.

23                   There it goes. Great.

24                   The Sunset Reservoir -- okay. There it goes.

25                   Right there on the --

1 UNIDENTIFIED SPEAKER: Is that the Sunset?

2 MR. TAKARA: Yeah. Sunset Reservoir.

3 Actually, we have five wells that pump into the  
4 Sunset Reservoir. The three wells shown there is, the  
5 most northern one would be the Bangham well, the one to the  
6 left of it would be the Coplin one, and immediately south of  
7 that is Sunset.

8 We also have two additional wells located further  
9 east, Garfield and Villa well. Five wells pumps into this  
10 one 15 million gallon reservoir, and it's also blended with  
11 water imported from MWD.

12 Back in January 2002, when the action level was  
13 revised down, I think it was revised downward, we shut off,  
14 I think, four of the five wells. We left -- I think  
15 Garfield well was the only well remaining on which we were  
16 able to continue to blend with MWD.

17 But periodically, Met -- Met would serve us  
18 different sources of water. Most of the time it was  
19 usually a 50/50 blend between Colorado and the State water  
20 project water. But because of some construction work they  
21 did on the east side of the -- on their east intake  
22 structure, they gave us 100 percent state water, and then  
23 we were able to blend the other wells with Metropolitan  
24 water.

25 State water project has no perchlorate compared

1 to the Colorado, so we were able to do that. But we  
2 stopped doing that operation since Met is now back to a  
3 blend of 60/40 or 45/55 percent. I'm not sure exactly  
4 what's the ratio.

5 But going back to some historical data for our  
6 perchlorate reservoir wells -- I'm taking this back to  
7 January 2004 -- there have been significant increases over  
8 the last 12 months in the peak levels for all five wells.

9 Just to kind of give you an idea, most of our --  
10 most of these three wells right here had perchlorate levels  
11 either at 4 or at ND in the beginning of 2004.

12 That's Villa -- oh, I apologize. I apologize.  
13 Garfield and Villa were on the east side and Bangham well,  
14 which is the furthest north, had levels somewhere around 4  
15 or ND. Coplin and Sunset levels were somewhere between 11  
16 to 16 PPB.

17 But since January 2004 to December, Garfield went  
18 from a 4, a nondetect, to around 9 1/2, 10. Villa well  
19 went from 4 to around 8. That well is now offline.

20 We couldn't continue taking any more samples  
21 because of some mechanical problems. Bangham has gone from  
22 about 4 to around 15 parts. Coplin went from 11 to around  
23 25 parts. Sunset -- Sunset went from 16 to as high as 31 to  
24 around 27 parts per billion. This is all in December.

25 So right now, our Garfield well, we're detecting

1 around 9 1/2, 10, but we're blending that with MWD water.

2 MR. BURIL: Gary, of the diamonds that were up there,  
3 which ones are which as far as the wells?

4 MR. TAKARA: The most northern one is Bangham well.  
5 Immediately to the left of that is Coplin. And below that  
6 is Sunset.

7 And then we have two further wells way on the  
8 east side, further east of that, maybe about -- maybe a  
9 quarter -- maybe about a block further east of this.

10 MR. FIELDS: They're south -- a little more south too.

11 MR. TAKARA: Yes. Yeah. You're right. Close to the  
12 210 Freeway.

13 MR. BURIL: What was just down there to the left of  
14 them to be (inaudible)?

15 MR. TAKARA: Oh, that's Sheldon well. It's an  
16 inactive well.

17 MS. FELLOWS: Which the Star-News showed as an active  
18 one.

19 MR. TAKARA: What's that?

20 MS. FELLOWS: The Star-News article on that showed it  
21 as an active well.

22 MR. TAKARA: Oh, it did? Okay.

23 It's a really small production well. We lost it.  
24 I can't remember for what reason. Maybe an earthquake,  
25 damaged a shaft or something.

1           MR. FIELDS: Gary, are the perchlorate results you're  
2   seeing in those wells now -- are they the highest that have  
3   been seen?

4           MS. BABBITT: Absolutely.

5           MR. TAKARA: Yeah. I think so.

6           MR. FIELDS: I seem to remember in the Sunset and some  
7   of the others, even back in '97, you had it above 20,  
8   closer to 30, looking at the DHS website.

9                    I mean, what I'm -- I don't know if this is like  
10   Sunset and Coplin, I'm not sure if that's a trend or just a  
11   periodic spike that you've seen ever since you've been  
12   monitoring them.

13          MR. TAKARA: You might be correct. I just plugged in  
14   the last 12 months. Sunset was usually our highest -- one  
15   of our highest perchlorate level wells.

16          MR. FIELDS: Yeah.

17          MR. TAKARA: I just don't recall what was the highest  
18   level we detected since '97.

19          MR. FIELDS: We can look back. I have those graphs  
20   someplace from the DHS website.

21                    But just to meet -- I mean, from my recollection,  
22   we've seen levels that high before. In a couple of those,  
23   not in the further south and further east wells, but  
24   certainly in the Sunset and Coplin, I believe.

25          MS. BABBITT: Not in Garfield.

1           MR. FIELDS: Right. Not in the ones that are further  
2 south.

3           MR. TAKARA: But since July of 2004, that's when the  
4 trend has really significantly increased.

5                   I apologize. I didn't create a chart to be shown  
6 on the PowerPoint, but maybe I could kind of share this  
7 back here. It's kind of small to see, but you can more or  
8 less see that since July, these charts have really  
9 increased the perchlorate levels.

10          MR. SORSHER: Are they -- these wells are located  
11 fairly close to each other? Are they all more or less in  
12 the same screen, in the same zones?

13          MR. TAKARA: More the same.

14          MR. SORSHER: There could be some variability in the  
15 concentrations from well to well.

16          MR. TAKARA: Yeah. I wouldn't know if they're  
17 screened.

18          MR. SORSHER: When they're all -- when all three of --  
19 these three, when they're all on at the same time, do they  
20 impact each other as far as lowering the cone of depression  
21 there?

22          MR. TAKARA: I'm not sure. It's been so long since we  
23 ran all five wells.

24                   Bangham well is the most new -- is the newest of  
25 the five wells. Sunset and Coplin are really old wells.

1                   Is that pretty much what you wanted to hear?

2           MR. SORSHER: That's fine.

3                   You know, it just raises the question as to what  
4 the geology is, you know, in that localized area. I  
5 guess that's something that we can look at.

6           MS. BABBITT: Sunset and Coplin.

7           MR. SORSHER: They kind of fluctuate together?

8           MS. BABBITT: Right. Uh-huh.

9           MR. FIELDS: What you were getting at, Alan, one of  
10 the three wells that are very close together, relatively,  
11 had significantly lower perchlorate, so there has to be  
12 some reason for that.

13          MR. SORSHER: Yeah.

14          MR. BURIL: How recently was Bangham constructed,  
15 Gary?

16          MR. TAKARA: I'm guessing around '95, '96.

17          MR. BURIL: Is there data on the screened intervals in  
18 the soil?

19          MR. TAKARA: Oh, yeah. We have that. It's a new well  
20 so we would have that in our files.

21                   But when it came to -- let's see. The three  
22 that are most clustered close to each other to the Sunset  
23 Reservoir, they have definitely the highest levels of  
24 perchlorate compared to the other two located on the east  
25 side.



1 I should also add that we also have some  
2 additional wells on the east side, what we refer to as  
3 Pasadena East wells. We have six wells on the east side.  
4 They pump directly into our distribution system.

5 Monte Vista well was taken offline back in  
6 August. We hit a level of somewhere between 7 to 9 PPB. I  
7 don't have all the data, but since then we were unable to  
8 continue taking data because of some mechanical problems  
9 with the wells.

10 But all the other wells have been either hitting  
11 4 or nondetect. We had one spike in Well 15, which is one  
12 of our newest wells way on the east side. We hit somewhere  
13 around 4.4.

14 MR. FIELDS: And these wells are another two miles  
15 east of --

16 MR. TAKARA: Oh, from Sunset --

17 MR. FIELDS: Sunset.

18 MR. TAKARA: -- they're -- we have -- we have about  
19 two wells located center of Pasadena, and the other three  
20 or four wells are located on the far end of the eastern  
21 edge of Pasadena, which is about three and a half miles.

22 MR. SLATEN: Does that mean you've seen perchlorate at  
23 some level in every single City well?

24 MR. TAKARA: No. Not all of them but --

25 MR. SLATEN: Most.

1           MR. TAKARA: Yeah, most of them. For example, Well  
2   59, which is now actually called Twombly well --

3           MS. FELLOWS: Called what?

4           MR. TAKARA: Twombly, named after someone. I'm not  
5   sure exactly. I can't remember the history. For the last  
6   12 months, prior 12 months, we had no hits, and then we had  
7   one in December of 4.4.

8           MR. FIELDS: We have a figure at the end. This is a  
9   problem. So these are the three, Bangham, Coplin, Sunset,  
10   Garfield, Villa. You said Craig and Monte Vista?

11          MR. TAKARA: Yeah. Monte Vista is offline because of  
12   the perchlorate levels. Craig is offline because we had  
13   some mechanical problems.

14          MR. FIELDS: Woodbury?

15          MR. TAKARA: Woodbury is on.

16                 Then we also had, further to the east, that 58,  
17   that would be Twombly well. Right below it to the right is  
18   the Chapman well, and that's online. And then we also have  
19   59 -- if you go further left, there you go, that's our  
20   Wadsworth well.

21          MS. FELLOWS: So 58 is the one with the spike, and 59  
22   doesn't have anything?

23          MR. TAKARA: Right.

24                 And right below 58, south of the 210 Freeway, you  
25   see that "JOU," that's our Jordan well. That's been

1 offline for years because of air problems.

2 MR. SORSHER: And the Twombly well, that's 58; right?

3 MR. TAKARA: Yes.

4 MR. SORSHER: Have they detected any VOCs?

5 MS. BABBITT: No.

6 MR. SORSHER: Where is Caltech with respect to some  
7 of these wells?

8 MR. TAKARA: Caltech--

9 MS. BABBITT: In the middle.

10 MR. TAKARA: Woodbury due south, I would say.

11 MS. FELLOWS: Here (indicating).

12 MR. FIELDS: There's a big space here in the road.

13 MS. BABBITT: That's it. That's a college. PCC.

14 MS. FELLOWS: It is by PCC or both of them.

15 MR. SLATEN: We'll come back to this and talk a little  
16 bit about -- we'll use this, maybe talk more about what  
17 that -- what the model is.

18 I guess the other question I would have then,  
19 Gary, is do you want to talk any about the plan treatment that  
20 Pasadena's working on, treatment systems?

21 MR. TAKARA: Oh. Oh, yes. For Sunset, we sent out an  
22 RFP. We selected a consultant, Stetson Engineers. We will  
23 be entering into a contract with them. They will be  
24 assisting us with the procurement of the system, helping us  
25 with the design and the construction management services.

1 I'm not sure exactly -- hopefully, we can at  
2 least pick a system somewhere in mid summer, if not  
3 earlier, and start designing. Hopefully, within 18 months,  
4 somewhere around fall of '06, maybe, hopefully our goal is  
5 to have the plant online.

6 MR. SLATEN: What capacity do you think you're looking  
7 at?

8 MR. TAKARA: About 2,300 GPM. We're actually having  
9 the system designed for as much as 4,000 GPM, but our  
10 initial purchase of the equipment or lease of the equipment  
11 was going to be around 2,300.

12 MS. FELLOWS: And what about treatment on Monte Vista?

13 MR. TAKARA: Monte -- we're going to wait on that.  
14 We're going to hold back. Just -- the reasoning is because  
15 we're not sure exactly what the MCL levels will be.  
16 Hopefully, maybe with the OU-1 online, maybe with the OU-3  
17 online, with the Sunset well online, that may help with  
18 reducing some of the levels we see in Monte Vista. So we  
19 want to wait before we go and purchase or lease this  
20 equipment.

21 MS. FELLOWS: Was that the advisory board meeting we  
22 talked about MWD doing treatment on it?

23 MR. TAKARA: MWD doing treatment? Is that right? For  
24 us?

25 MS. FELLOWS: I thought so. I could have

1     misunderstood it because I've never heard --

2             MR. TAKARA:  Oh, you know what?  Okay.  I think what  
3     he's referring to is we are looking into entering into an  
4     agreement with MWD for a conjunctive use project.  And part  
5     of that conjunctive use may pay for some of this treatment  
6     system.  Because the only way that we can maximize the  
7     conjunctive use is we need as many wells to be in  
8     operation.  If there is perchlorate, then it becomes a  
9     problem so...

10            MS. FELLOWS:  Yeah.  And that was the context.

11            MR. TAKARA:  Yeah.  That's what he's probably  
12     referring to.

13            MS. FELLOWS:  It was actually.

14            MR. TAKARA:  Okay.  That's --

15            MR. SCHUMACHER:  Okay.  They're looking for you for  
16     that to -- for the treatment of the perchlorate.

17            MS. FELLOWS:  No.  No.

18            MR. SCHUMACHER:  I know.  I'm just telling you because  
19     I've been to the meetings and everything.  So I'm just  
20     letting you know that each side is saying that the other is  
21     going to pay for it.

22            MS. FELLOWS:  Well, we're not saying anybody else is  
23     going to pay for it.

24            MR. SCHUMACHER:  Well, I mean --

25            MS. FELLOWS:  I'm not sure anybody's going to pay for

1 it. But I just was trying to clarify because, I mean, in a  
2 Utility Advisory Board meeting where I -- you know, I had  
3 written down a little card to speak, and ask  
4 the questions.

5 MR. TAKARA: Yeah. That's the only thing I can think  
6 of is what Bob is referring to, MWD is going to be paying  
7 for the treatment. That would be part of the conjunctive  
8 use agreement.

9 MS. FELLOWS: It was definitely in that discussion.

10 MR. TAKARA: Yeah. There you go.

11 MR. SLATEN: Okay.

12 MR. SORSHER: What's the time frame for this  
13 conjunctive use?

14 MR. TAKARA: No. I'm not sure. I have no idea.

15 MR. SLATEN: Then moving along to talk about 97-005  
16 documentation. We've been through the rounds of iteration  
17 with comments. The last one we incorporated the City of  
18 Pasadena, and GeoSyntec comments, updated it, and sent the  
19 updated website link out, sent that out to the RPM list  
20 yesterday.

21 So, I guess, the question is how do we move it  
22 forward? Anything else we need to do? We've been pulling  
23 together and taking the lead on getting the technical  
24 information and the comments together and want to do  
25 whatever we can to move the 97-005 process along.

1                   So I guess the question I have for everybody is  
2   what's next, and whose court is the ball in now?

3           MR. SORSHER:   (Indicating.)

4           MR. SLATEN:   Okay.  Let the record reflect that DHS --

5           MR. SORSHER:   I'm finishing up some other projects on  
6   my plate, so this is going to be, very shortly, number one.

7           MR. SLATEN:   Okay.  All right.

8                   Well, we have structured it such that it covers  
9   the Monk Hill sub-basin, and information that's in it  
10   relates to Lincoln Avenue Water Company's area as well as  
11   the rest of the Monk Hill and the Pasadena areas.  So we  
12   want -- that's what we have committed to do, is try to put  
13   together something that takes care of that, even though  
14   it's not -- 97-005 is not ours, it's not going to be our  
15   permit or anything, but we're trying to do what we can to  
16   help to make sure that people are able to produce their  
17   water.

18                   So we can just bug you, then, in the future if we  
19   wonder where it is?  Okay.

20           MR. SORSHER:   Absolutely.  Absolutely.

21           MR. SLATEN:   Anything else on 97-005?

22           MR. SORSHER:   Nothing new, really.

23           MR. SLATEN:   Okay.

24           MR. TAKARA:   Oh, Steve, I received a link for that  
25   97-005 yesterday.  I didn't get a chance to open it up yet.

1 But one of our concerns we had with prior reviews, and this  
2 is probably going on to our, what, fourth review of this  
3 document, and I know it's been changing, was that when we  
4 make these comments, refer to these comments, we ask,  
5 however, this time -- I guess Battelle is drafting a  
6 document -- that you specifically address those comments in  
7 telling us whether those changes have been made. Has that  
8 now been provided?

9 MR. FIELDS: There are two sets of responses to  
10 comments tables on the link, one for PWP comments and one  
11 for --

12 MR. TAKARA: Okay. Good.

13 MR. FIELDS: GeoSyntec comments.

14 So we heard your request, and it's on the  
15 website.

16 MR. SLATEN: So it's on a table where it's easy for  
17 them to see?

18 MR. FIELDS: Yes. It's just on a table, exactly.  
19 We'll have comments, response.

20 MR. TAKARA: Okay. Great.

21 MR. SORSHER: I downloaded all of it off of my local  
22 computer, so I have it all.

23 MR. SLATEN: Okay.

24 MR. TAKARA: Weekend project.

25 MR. SORSHER: My weekend project.



1 MR. SLATEN: Next slide.

2 All right. This one, it starts to get  
3 interesting now.

4 I'm talking about the OU-3 additional  
5 investigation. We know that we need to understand the  
6 extent of travel of chemicals from JPL. We also are  
7 interested in trying to understand what's going on at the  
8 Sunset Reservoir, and if those chemicals originated from  
9 JPL.

10 So we've been working to the -- our addendum work  
11 plan of last year. We have MW-25 installed in the north  
12 end of the Sunset Reservoir yard at Pasadena. And from  
13 that, they'll be -- we'll be submitting a report, or  
14 reports, depending on the next well and how soon we're able  
15 to get a location for that and get that one in.

16 Does the next slide talk more about MW-26?

17 MR. FIELDS: It shows it, yes.

18 MR. SLATEN: Okay. Let me talk about MW-25- -- yeah,  
19 let's go to the map. It gives people something nice to  
20 focus their eyes on.

21 So MW-25 is completed, and we will be sampling it  
22 with the next round of sampling. MW --

23 MS. ARTEAGA: Have you done any sampling yet when you  
24 installed it, or it's not been sampled at all?

25 MR. SLATEN: Yes. There has been sampling. You

1 always sample as you install it. There have been initial  
2 samples taken from it.

3 But, according to the West Bay people, and I  
4 believe it too, in order to get -- to make sure you're  
5 getting a good sample of native groundwater and not  
6 something that has to do with development and everything,  
7 it needs to rest a little bit so the natural flow of  
8 groundwater comes through.

9 So now, when we pull a sample in February,  
10 probably in the next round, we would expect that to be a  
11 sample representative of groundwater. So, yeah, we've  
12 taken some initial samples, analyzed for different things,  
13 including perchlorate in the initial sampling. And we saw  
14 a little bit of perchlorate in the initial sample, which we  
15 expect is representative --

16 MS. ARTEAGA: A little bit?

17 MR. FIELDS: Up to 13 PPB. The results have not gone  
18 through the Q.A. but between nondetect and 13.

19 MR. SLATEN: So nothing surprising.

20 MR. BURIL: The extension between screen to screen, is  
21 that --

22 MR. FIELDS: We're still -- what we're seeing is in  
23 this time, you know, when you're developing the well, I  
24 think there is a lot of mixing within the vertical profile  
25 of the well. That's confirmed by West Bay.

1           So initially, they were all kind of consistent  
2 across the wells, and then, as we waited another month and  
3 took another sample, we did see some vertical profiling,  
4 particularly in the lowest layer we saw nondetects. In the  
5 upper ones, they were all, I believe, 8 to 12,  
6 basically.

7           MR. SLATEN: But, you know, it's early enough,  
8 preliminary enough that I don't want us to base conclusions  
9 on it yet. We've got sampling coming up, and we're going to  
10 have good data to analyze before long.

11           Main point getting to next is the difficulty  
12 we've had in drilling the second well and finding a  
13 location to drill the second well. And this just -- it's  
14 kind of tight, and we haven't found a good spot and gotten  
15 permission to drill a well.

16           We're working with the Pasadena Unified School  
17 District is our best hope because they own -- around where  
18 that dot is, blue dot, they basically own several blocks  
19 around there.

20           As you see, kind of up left of the blue dot,  
21 those buildings, that's all -- those blocks are all  
22 Pasadena Unified School District there. They've got  
23 football fields and parking lots. We tried to get  
24 permission, actually, to go into the street, into the  
25 middle of the street there, and we're not able to --

1 MS. FELLOWS: In fact, that's where this thing is, it's  
2 on Montana.

3 MR. SLATEN: Okay. It's -- what's the name of the  
4 street?

5 MS. FELLOWS: Montana.

6 MR. SLATEN: Montana Street. We thought that would be  
7 a solution, to be in Montana Street, but there was a  
8 complication between the surface owner and then being able  
9 to get a permission release from the City of Pasadena,  
10 because that's where they run their -- they expect people  
11 to rent out property that have utilities there. They rent  
12 that out for utilities. There's a legal question. So  
13 we're kind of stumped.

14 The school district engineer people have been  
15 very nice to us when they met with us, but then, when it  
16 goes to the next step, which I guess is getting approval  
17 of -- an access agreement approval, which probably goes to  
18 legal, we haven't heard back from them for a few months,  
19 and they haven't called back or answered e-mails or  
20 anything.

21 So I've been -- we've been trying to look for  
22 what other help we could get from whatever source to help  
23 give us an in to the Pasadena Unified School District. So  
24 we're still working that.

25 There's an empty parking lot that's a very good

1 place for us, and the engineers agree would be a fine place  
2 for them. So still, though, we have nothing yet to work  
3 with, and we don't know when we'll be able to initiate the  
4 next monitoring well.

5 MR. TAKARA: Steve --

6 MR. SLATEN: Yes.

7 MR. TAKARA: You know, when we're looking up that  
8 information on that mapping for that property, we noticed  
9 that there was an empty lot. This is close to the Lincoln  
10 cutoff, and this would be directly west of the 210 Freeway,  
11 due -- immediately due west of the freeway off Lincoln  
12 Avenue. There are some homes where we saw this very large  
13 lot. I wasn't sure if that was a CalTrans lot.

14 Any conversations or thoughts about using or --

15 MR. SLATEN: You're not talking about Woodbury and  
16 Canada?

17 MR. TAKARA: Not Woodbury.

18 MS. FELLOWS: You're not talking about your  
19 right-of-way area? You're talking about an empty lot. You  
20 don't know who owns it?

21 MR. TAKARA: Right. This is just west of the 210.

22 MR. SLATEN: West of the 210 --

23 MR. TAKARA: Back in that area, I guess that's more  
24 south -- southwest of the 210, right off the Lincoln Avenue  
25 cutoff.

1 MS. FELLOWS: About where?

2 MR. SLATEN: All I --

3 MR. FIELDS: Lincoln Avenue is this road right here  
4 (indicating).

5 MR. TAKARA: Okay. That's Lincoln Avenue. Okay.

6 MR. SLATEN: Right -- go left, just right there. And  
7 that is an empty thing that's sort of -- it's a part of the  
8 access ramp -- the on-ramp, because the on-ramp kind of  
9 circles around there. There are houses on the south side  
10 of that street, but then there is, like, an empty spot.  
11 That street sort of starts the on-ramp. It's kind of a  
12 strange on-ramp right there.

13 So no, we haven't approached anybody about that.  
14 Location is a good one. It's getting -- yeah, it's getting  
15 a little farther south than maybe we had wanted to be, but  
16 it's better than nothing. That might be a good location.

17 So what's the suggestion, that we call CalTrans,  
18 on a cold call?

19 MR. TAKARA: That might be a CalTrans right-of-way  
20 so...

21 Anyway, I just was noticing when we were looking  
22 at the aerial topography maps, that there was a fairly  
23 large lot -- empty lot. I wasn't sure who owned that lot.

24 MS. FELLOWS: It's easy enough to go to the County  
25 Recorder and --

1           MR. SLATEN: All right. We'll follow up on that.

2           MR. TAKARA: We will also check in our office, see if

3 we can find someone who owns that lot.

4           MR. SLATEN: Good. Thank you.

5           MS. FELLOWS: Or if you get the parcel number, at

6 least.

7           MR. TAKARA: Yes. I think we can dig up the parcels.

8           MR. SLATEN: Okay. Keith, was there anything else we

9 needed to say about trying to locate the monitoring well --

10 what's the next step with monitoring well location?

11          MR. FIELDS: I think we've covered it. We have to get

12 an agreement in place and then mobilize.

13          MR. SLATEN: Okay. And just the point is,

14 mobilization, also, we have to fit in with the window of

15 the driller. If we got an agreement tomorrow, our driller

16 might not be available for six weeks, and it just depends.

17 And if you don't have them both at the same time, you don't

18 have -- you don't have anything, you're not able to start

19 drilling.

20          MR. SORSHER: Steve?

21          MR. SLATEN: Yes.

22          MR. SORSHER: On the first monitoring well, 25 --

23          MR. SLATEN: Yes.

24          MR. SORSHER: -- how did that go? Did it go smoothly?

25          MR. SLATEN: Yeah. I thought it went well.

1 David, you were the man in charge.

2 MR. CLEXTON: Smooth as it could go. Very easy. We  
3 were able to drill at a good site with security, and so  
4 we're going to keep going.

5 MR. SORSHER: How deep is the well?

6 MR. CLEXTON: It's just over 800 feet, but it goes  
7 into the bedrock about 50 feet, and there's five screened  
8 intervals separated almost about 100 feet each.  
9 It went very well.

10 MR. SORSHER: Which driller did you use?

11 MR. CLEXTON: WDC. They want -- they were called  
12 Water Development Corp., but they want to be called WDC  
13 now.

14 MR. SORSHER: Really?

15 MR. FIELDS: They used to be called Water DC.

16 MS. FELLOWS: Like Washington DC.

17 Just so you guys know, we did offer to take the  
18 PUSD people over to the City yard to show them what the  
19 monitoring well looks like. We could show them any  
20 monitoring well, for that matter; how much space used and  
21 show them the pictures that we took to get an idea  
22 of what is involved.

23 MR. TAKARA: Okay.

24 MR. SLATEN: Okay. Next.

25 MR. FIELDS: Gary, there was a piece of property right



1 here that was City of Pasadena.

2 MR. SLATEN: Gary told me this morning that's not City  
3 of Pasadena. Remember, the one I was pointing to across  
4 the street that was really narrow next to a house, that is  
5 City of Pasadena, but it's, at most, 15 feet wide, and  
6 it -- a house window comes right up to it, so it would be  
7 very hard for us to use.

8 MS. FELLOWS: Right of way.

9 MR. SLATEN: Okay. So I'm going to start into talking  
10 about what we're doing now to kind of re-evaluate, looking  
11 at the water to try to figure out what's going on with the  
12 perchlorate source.

13 Historically, we've done most of the things on  
14 this page, which is look at the water types. This -- most  
15 of this is probably not new to most of us, but we look at  
16 the water type, without going into detail -- I won't read  
17 it all off. We look at what other chemicals were located  
18 with the VOCs, using other chemicals sort of as indicators  
19 or tracers. And, of course, the groundwater modeling  
20 that's gone on, both ours and Raymond Basin's.

21 This -- the point of putting this all back up  
22 here is just to say that with this, the answers have not  
23 always been definitive. There are still questions. We  
24 don't know everything we need to know. We need to do  
25 something more. We can't just rely on what we've already

1 done to give us all the answers that we need.

2 And that leads us into what we're doing next,  
3 which is the isotopic analysis of the groundwater, which is  
4 our plan to do a new type of evaluation.

5 What we're going to do is also re-evaluate the  
6 old data, so we'll get in -- we'll talk a little bit about  
7 that.

8 So for the isotopic study, we've invited a team  
9 of experts who do this type of work from around the country  
10 to be on the team and to give input into the plan. So we  
11 gave them existing data information to get them  
12 acclimatized, I guess, to the local information, and had  
13 initial background meetings to kind of explain the problem  
14 and get them thinking about what needed to be done.

15 We have drafted the work plan, and that went out  
16 yesterday as well to everybody on the RPM list. Now, it's  
17 a matter of continuing to -- such as establishing the  
18 contracts with the laboratories that are going to be doing  
19 the analysis, and the universities. Then we'll have to  
20 collect samples and start doing analysis on them.

21 This is not -- the message I want to get across  
22 is this is not as standard -- this is not standard work  
23 that is done at laboratories for profit around the country,  
24 like VOCs or other things are done. This is new, different  
25 and largely kind of a study thing that is done by

1 specialists at universities, with special equipment, who  
2 are kind of more on the cutting edge. Not something you  
3 can just go out and purchase off the shelf, if you will.  
4 So that's going to add some to the time and the complexity  
5 of what goes on.

6 All that will end up in our addendum report when  
7 we do have information back.

8 MR. SORSHER: Does this mean they're paying you for  
9 the privilege of studying your isotopes?

10 MR. SLATEN: No. No. It means that we are getting to  
11 support some good, new ways of trying to understand the  
12 world that will be important to other people besides us.  
13 But it's necessary for us now, so it's a worthwhile thing  
14 for us to fund.

15 Hopefully -- you know, hopefully, we will get  
16 here good information that can help to put together a story  
17 that will help to shed light.

18 There are no guarantees, though. That's one  
19 thing that we all need to know going into this. We don't  
20 know what we're going to get, and we don't know how clear  
21 the answers are going to be. We're going to get  
22 information, but what that information tells us, there's no  
23 guarantee that it will be a clear answer. It could be --  
24 it will be more information. It will be useful, to some  
25 extent, but there is not necessarily a magic bullet here

1     that says yes or no, absolutely it's clear, we understand  
2     the world now.

3             MR. SORSHER: Did you get kind of a sense from this  
4     team of experts what they feel they can provide? I mean,  
5     do they feel like this is a good application for this  
6     technology?

7             MR. SLATEN: Yes. Yeah. They are optimistic that  
8     this is a good application. There will be some interesting  
9     information that comes out of this. I got a little more  
10    coming up, the detail on that. Keith has some more  
11    detailed notes on it.

12            So Keith, if I miss things, just offhand, if you  
13    think -- what I'm not trying to do here is to go too much  
14    in detail on, say, you know, piper diagrams to try to  
15    explain to everybody what everything is. This is more up  
16    for just kind of a pretty picture to show that we have  
17    evaluated water chemistry on the -- what I would call the  
18    standard parameters, you know, sodium, potassium, calcium,  
19    so forth, in the past. And we've done things like the  
20    piper diagrams to try to define water types, and we've  
21    defined three major water types.

22            The experts, when they start -- we start  
23    evaluating again, one thing I want to do is kind of go back  
24    through what we already know and kind of re-evaluate, just  
25    make sure that what we thought we knew in the past was --

1 is still -- would still drive the same type of conclusions  
2 out of it.

3 And they've indicated they can -- that they're  
4 looking at a piper diagram like this. They might actually  
5 find more than three types of water; that there might be --  
6 depending on how the statistics give you groupings, there  
7 might be a couple of more types or subtypes of water, even  
8 on something like this, that we might not have seen in the  
9 past.

10 So as a part of doing our homework for this, we  
11 don't want to just take for granted we thought we knew  
12 everything about everything we already knew. So some  
13 re-evaluation is going on of the historical data and decide  
14 how much more data we need to collect along the same type  
15 of parameters.

16 Is that everything I needed to say about that  
17 slide, Keith? All right.

18 Now, here's where it does get more complicated.  
19 What I'm trying to do for myself is understand the basics  
20 so that I can explain to a layperson or to the public what  
21 we're doing without getting too much scientific  
22 mumbo-jumbo. But I have to go back a little bit and try to  
23 remember some of my college chemistry and some of the stuff  
24 I've learned in jobs in the past but have put on -- had  
25 lost out of my long-term memory or put on the back burner.

1       So I'm going to go over this.   Bear with me.

2                   Keith, you can jump in if it seems that I miss  
3       anything.

4                   But for the isotopic analysis, what we're trying  
5       to do is look at the different isotopes of elements and  
6       different ratios of isotopes.   So what we're looking at for  
7       an isotope is that alternate form of the element that has  
8       the same number of protons but a different number of  
9       neutrons which give the isotope a different atomic weight;  
10      makes it -- it's still the same element.

11                  For example, you know, gold has a couple of --  
12      may have a couple of isotopes, but it still looks, smells,  
13      and tastes like gold, and you wouldn't know that it was  
14      slightly different on the atomic scale.   It's not  
15      radioactive.   It's not -- we're not talking about, you  
16      know, radio -- there are lots of isotopes that go into  
17      radioisotopes that you can make inter-reactor or that exist  
18      in nature, but we're talking about stable isotopes that are  
19      slightly different in the number of neutrons they have.

20                  So, for example, chlorine, we'll be looking at  
21      chlorine 35 and chlorine 37 that exist in the perchlorate  
22      molecule.

23                  Oxygen, we've got oxygen 16, 17, and 18.

24                  And for hydrogen, we'll be looking at hydrogen 1,  
25      2, and tritium hydrogen 3.   Also, we'll look at, in water,

1 helium 3 and strontium 86 and 87.

2 And for really smart people who can look at these  
3 ratios of different isotopes, they can help us to  
4 distinguish between perchlorate of different origins and  
5 help to distinguish water sources and origins. Actually,  
6 another tool for water typing.

7 Keith, was there more you think needed to be  
8 added here?

9 MR. SORSHER: Can I ask, if I'm understanding this  
10 correctly, in other words -- in other words, the hypothesis  
11 or the theory of this, is that, for example, a perchlorate  
12 that came from a Chilean fertilizer has a certain ratio of  
13 chlorine 35, chlorine 37 --

14 MR. SLATEN: Yep.

15 MR. SORSHER: -- versus a perchlorate that was maybe  
16 manufactured in Ohio and used as a --

17 MR. SLATEN: Exactly.

18 MR. SORSHER: -- fuel has a different ratio.

19 MR. SLATEN: Yeah. I think we may have some charts  
20 that actually show how those were plotted out in the past.

21 MR. FIELDS: I mean, isotopes are measured by mass  
22 spectrometer, and so, in that respect, since they have a  
23 different atomic weight, different masses, it would come  
24 out different on their spectrometer.

25 MR. SLATEN: So chemically they behave almost

1 identically. Very little difference to the naked eye.  
2 It's really on an atomic scale. Although we may get into  
3 it a little bit, they can act slightly different in the  
4 environment because sometimes bacteria like one form better  
5 than the other and will preferentially reduce or change  
6 that form.

7           So there is slightly -- you know, a bug -- a  
8 bacteria can sometimes tell the difference between them,  
9 even though we wouldn't be able to with the naked eye.

10           MR. SORSHER: I mean, the electrons, which is where  
11 the chemical reactions take place, are the same because  
12 the number of protons are the same, just the neutrons that  
13 are different.

14           MR. SLATEN: Yes.

15           MS. ARTEAGA: So is the ability for the study to work  
16 dependent upon knowing what the source of perchlorate used  
17 at JPL was?

18           MR. SLATEN: Partially. And that's why we're going  
19 right up here to the -- on JPL to the -- to the highest  
20 area to try to get what we think is -- what we call an  
21 "M point," what is -- what is underneath JPL. Kind of the  
22 JPL fingerprinted perchlorate.

23           MS. ARTEAGA: But if there were two sources of  
24 perchlorate that both, say, came from Kerr McGee, would you  
25 be able to ascertain that they -- one was used at JPL and



1 another one was used at somewhere else?

2 MR. SLATEN: Maybe not. That's -- there are all kinds  
3 of ways where this information -- as I -- the caveats I led  
4 into, there are all kinds of ways where the answers could  
5 be muddy here. And you don't know. Since we don't know  
6 what source is where and who, you know, was it the same  
7 source that was put out somewhere else, since we don't know  
8 the history of everything and where things came from, we're  
9 kind of back -- going backwards and seeing if the answers  
10 give us the history or if they just give us a cloudy  
11 answer.

12 MR. SORSHER: It could be more than two sources. It  
13 could be three, four, six sources. And so, you know, you  
14 could get six different fingerprints, and then the task is  
15 to try to sort it all out --

16 MR. SLATEN: Yeah.

17 MR. FIELDS: It needs to be clear that there's two  
18 things we're doing with isotopes. One is trying to look at  
19 chlorine and oxygen ratios within the perchlorate  
20 crystallized form itself. And then we're also using  
21 isotopes to enhance our understanding of our water typing.  
22 We're going to look at oxygen, hydrogen, tritium, helium,  
23 strontium in the groundwater itself, and help us understand  
24 where groundwater originates, how it mixes, how much  
25 groundwater is from upgradient at JPL, how much groundwater

1 is from the San Gabriel runoff, how much groundwater could  
2 have originated beneath the JPL lab.

3 So even if we couldn't distinguish between  
4 sources of perchlorate, we still would have to use isotopic  
5 data that should help us understand our water typing and  
6 groundwater modeling.

7 MR. SORSHER: What's the -- how long do they think  
8 this whole study will take before they come up with a  
9 report?

10 MR. SLATEN: It's going to take a while. If I were to  
11 say in a year or so, might have a report, maybe longer,  
12 depending on how long -- I'm going to talk a little bit  
13 more about how difficult it is to both take the samples and  
14 to analyze the samples.

15 Like I say, it's not -- we don't have a lab on  
16 contract to guarantee us a 30-day turnaround. This is kind  
17 of a one-of-a-kind study right now. So it will be a while.  
18 It could be well over a year.

19 MR. COFFMAN: I would presume that your original  
20 sources of perchlorate are long gone as far as the raw  
21 material --

22 THE COURT REPORTER: I'm sorry. I can't hear you.

23 MR. COFFMAN: I'm sorry. I'm presuming that the  
24 original perchlorate source material is long gone, as far  
25 as the dry material, the starting material -- right? -- and

1    so you may find that you're going to be looking at a  
2    homogeneous mix of four or five different perchlorate  
3    sources.  So you may find --

4           MR. SLATEN:  That's possible.

5           MR. COFFMAN:  -- that the isotope work may not help  
6    you distinguish between different --

7           MR. SLATEN:  Depending on how much mixing is going on  
8    and where.  We are -- I'll get to some maps about just  
9    how -- the different areas we're going to be taking samples  
10   so it'll show you that not everywhere will it all be mixed  
11   together, but some places it may be.

12           Okay.  They talk about the ratios to stable  
13   isotopes, so what are of interest.  And they express them  
14   as Delta values and parts per thousand or per million.  But  
15   it's always relative to a standard.

16           And if you looked into the math equation there,  
17   you'd say you have to take a standard.  I think they often  
18   use the Vienna Standard Mean Ocean Water, and it's a ratio  
19   of what's in the sample versus what's in the standard times  
20   a thousand.  So you get a -- you're -- what you're talking  
21   about is in a ratio.

22           So it gets a little complicated just, you know,  
23   from the -- trying to understand what it is you're dealing  
24   with, but when you get -- what you get out of that is a  
25   number that you can work with, a number that is comparable

1 to other numbers, is kind of the basic that I get out of,  
2 you know, the math equation.

3 Do you want to add anything to that, Keith?

4 I mean, for most of us, we don't need to know  
5 more than that except for when you get a ratio out, you get  
6 a number that you can start putting down on a chart or a  
7 graph, and talking about that number has a meaning and the  
8 meaning is the ratio for our sample to the ratio of some  
9 standard.

10 MR. FIELDS: I thought, when I read the literature, it  
11 would just dump into this Delta value of 18, and it wasn't  
12 clear to me what is -- and then they talk about isotopic  
13 ratios. But this is -- you have the isotopes that you  
14 measure, and then they compare those to each other and to a  
15 standard to come up with these Delta values. Typically  
16 what we see in the literature and what we see in our  
17 results are these Delta values.

18 MR. SLATEN: So how does that plot out? In this case,  
19 you know, we've got a Delta value of hydrogen 2, and the  
20 oxygen 18 in different samples of water, and what this is  
21 intended to show, this is a historical out of somebody  
22 else's database or somebody else's slide. Just to show,  
23 there's a creek they sampled where they had a good  
24 clustering or grouping, so that's one water type,  
25 obviously.

1           And then they took the Los Angeles River, which  
2   stretched a little bit along the line, but it still plots  
3   statistically as another water type with some variation.

4           All of that apparently, along with what people  
5   think is a global waterline, I suppose from other  
6   information, historically. But it does show you that you  
7   may be able to see some clustering and some differences in  
8   water types. So it begins to show how a tool can be used.

9           So as Keith already alluded to, there are two ways that  
10   we would use the isotopic study. One is to look at  
11   isotopic composition of the perchlorate -- and I'll talk a  
12   little bit more about how we physically get the perchlorate  
13   because that's an important part of what we're doing.

14           But once we physically get the perchlorate out  
15   concentrated, we look at, within the perchlorate, a sample  
16   that has to be several -- what did you say, about  
17   20 milligrams or something --

18           MR. FIELDS: It was like --

19           MR. SLATEN: Yeah. A little handful of perchlorate.  
20   You can look at, within the molecule itself, what's the  
21   composition of the oxygen and the chlorine?

22           MR. SORSHER: 20 milligrams of dry?

23           MR. SLATEN: Of pure crystalline perchlorate. I'll  
24   talk about how difficult that is to get if you start out  
25   with four parts per billion in water.

1                   So what we're also going to do is within the  
2   water itself, look within the water molecule, what are  
3   the isotopes ratios of the oxygen and the hydrogen, plus  
4   what else does it have in the way of tritium and helium and  
5   strontium ratios to give us water ages and water types. So  
6   it's more tools in the tool kit.

7                   You could do different parts of these separately  
8   and kind of hope that you get good answers.

9                   The direction I gave to the team was I don't want  
10   to nickel and dime this and go out and try to do it on the  
11   cheap and get part of an answer, and then have to go back  
12   and fill in with more part of an answer.

13                  I'd rather err a little bit on trying to get good  
14   information the first round -- the first time around;  
15   otherwise, we'll be going through iterations of this for  
16   years trying to figure out what's going on. And we do have  
17   an impact to -- potential impact to a large resource out  
18   there that we need to define sooner rather than later.

19                  On top of that, there are a few other things  
20   we're going to throw into the mix.

21                  We need to understand the biological activity  
22   that's going on because there is some possibility to change  
23   some of the ratios in the perchlorate. So we need to  
24   understand what's going on. There is biological activity  
25   going on. We need to try to define what that is and how

1 much it is.

2 In addition, apparently -- and I haven't read and  
3 don't know much about this -- but chlorofluorocarbon and  
4 sulfur hexafluoride in the groundwater may also give us  
5 some clues about water age and therefore water type and  
6 inference about water flow.

7 Anything you think needs to be added to that page,  
8 Keith?

9 MR. FIELDS: The tritium, CFC, sulfur hexafluoride  
10 give us -- can give scientists an understanding of how long  
11 it's been since that water was in contact with the  
12 environment.

13 So it may help us understand influence or input  
14 from the Arroyo Seco. We may not see those compounds  
15 during the point where -- beneath the facility that would  
16 help us get some understanding as far as the age of the  
17 water.

18 MR. SLATEN: Those are manmade chemicals. For  
19 example, tritium didn't exist in the environment before man  
20 started atmospheric testing of nuclear weapons. And it's  
21 distributed worldwide and worldwide fallout. And I've used  
22 that in the past, and it's a very effective age dating for  
23 water of whether it comes from surface water or whether  
24 it's older groundwater.

25 CFCs and sulfur hexafluoride are manmade, and I

1 don't understand exactly how they're used, how the tools  
2 apply. I'll be interested to see how these experts do this  
3 job for us.

4 MR. FIELDS: And biodegradation is important because I  
5 believe chlorine 35 will degrade 1.3 or 1.7 times percent  
6 faster than the chlorine 37.

7 So if you see a different isotopic makeup in  
8 water from JPL to someplace else, you need to determine if  
9 that could have been caused by biological degradation. So  
10 that's why there's so much analysis and effort looking into  
11 the biodegradation potential.

12 MR. SLATEN: Okay. This is one of Dr. Sturchio's  
13 figure, ratio of Delta of chlorine 37 to Del -- to oxygen  
14 18. And for -- let's just see what I can remember I  
15 understand off this.

16 He took -- the Atacama is the desert in Chile, so  
17 related to Chilean fertilizer, plotting down on the right,  
18 bottom right, which he's saying is a natural source.  
19 Manmade, anthropogenic sources have been plotted up on the  
20 top left from different sources. So I see that the  
21 Edwards Air Force Base groundwater.

22 What else about that, Keith, have I missed?

23 MR. FIELDS: This is actually a figure of perchlorate  
24 isotopes, and so is after you've gotten crystallized forms of  
25 perchlorate running through your mass spec.



1                   And so what's significant about this is that,  
2   particularly with natural versus anthropogenic sources,  
3   there is an isotopic distinction with depleted chlorine 37  
4   on the naturally occurring perchlorate. And you could -- with  
5   this data, you can  
6   start to understand where the perchlorate may have come  
7   from. And so this is work that Dr. Sturchio has been  
8   doing.

9                   Now, according to Dr. Sturchio, there is a  
10   possibility that you could determine between different  
11   anthropogenic sources as well. So, you know, there is  
12   evidently enough within the isotopic ratios to distinguish  
13   an Edwards Air Force Base source from this lab re-agent,  
14   potassium perchlorate source.

15                  So -- you know, but it's also possible that we  
16   could get samples back that are all within -- overlap  
17   within the anthropogenic sources, and we couldn't be able to  
18   tell the difference between anthropogenic sources. But  
19   there is the possibility that -- the experts are hopeful  
20   that we may be able to distinguish between manmade sources.

21                  MR. SLATEN: Okay. So this is the oxygen 17 anomaly  
22   that we're talking about. You can see that the manmade  
23   perchlorate seems to fall out along one line, and the  
24   naturally-occurring fertilizer, calling the commercial  
25   fertilizer up in the soils from Chile, plotted up along  
26   another line.

1                   Did I miss anything on that one, Keith?

2           MR. FIELDS: This is what the scientists are really  
3 excited about because they talk about -- you know, with  
4 this figure, we see that we may be able to distinguish  
5 between manmade and natural perchlorate. And here is  
6 another -- another piece of data that enforces that, and  
7 they're talking about the 0-17 anomaly. And this was an  
8 article that was in the ES&P last year.

9                   But Delta 17, the 0-17 anomaly, evidently they  
10 don't know exactly why it's there, in natural sources. But  
11 they believe it has something to do with atmospheric  
12 production of perchlorate when ozone, which has an excess  
13 of 0-17, reacts with volatile chlorine. So places like the  
14 Atacama Desert, they found this perchlorate in natural  
15 fertilizer. A lot of -- we've all heard about the Chilean  
16 nitrates and the perchlorate in that.

17                  We have also -- USGS did some initial work in  
18 California and elsewhere and found some -- they were  
19 looking for arid conditions, arid environments similar to the  
20 Atacama Desert in the United States, and they did find some  
21 places even in California where there was some natural  
22 perchlorate.

23                  And then also, there is some work being done by  
24 Texas Tech that's been in some news articles by --  
25 Andrew Jackson is leading that, but in West Texas, they're

1 finding low levels of perchlorate across a 60,000 acre area  
2 of West Texas that has this arid environment. And 25  
3 percent of their samples have above four PPB of  
4 perchlorate. And so they're currently in the process of  
5 running some of these analyses looking for this 0-17  
6 anomaly.

7 But there's lots of examples right now out there  
8 about natural perchlorate. And what's exciting to the  
9 scientists is that there are a couple tools that you can  
10 really tell the difference with.

11 So that's -- you know, when we're looking at our  
12 study, we don't know if -- one question we'll want to rule  
13 out is has any Chilean fertilizer been used in this area  
14 for orange groves or something like that? And maybe not.  
15 Probably not. But at least we could evaluate that. And  
16 also to look at natural perchlorate and then to see if  
17 there isn't any natural perchlorate, then can we  
18 distinguish between manmade sources.

19 But this is -- there's been a couple of news  
20 articles out on this one.

21 MR. SORSHER: I haven't read the work plan. I printed  
22 it out yesterday and glanced at it, and looking over Deltas  
23 and stuff, I kind of glanced over it very quickly.

24 MR. SLATEN: Well, Mark Ripperda said he was going to  
25 review it thoroughly cover to cover and provide comments on

1 the science.

2 MR. SORSHER: Excellent.

3 Just a thought occurred to me. Are they going to  
4 be sampling Met water? Have they gone --

5 MR. SLATEN: I'm going to get to that. I'm going to  
6 get to where -- you know, kind of the sample -- the idea of  
7 what we're going to sample. Yeah.

8 MS. ARTEAGA: And Hoffman, is that a brand name of a  
9 fertilizer? Is that who published the article?

10 MR. FIELDS: This is -- Hoffman fertilizer is a  
11 commercial fertilizer that is derived from these Chilean  
12 deposits. It's just a commercial fertilizer.

13 MS. ARTEAGA: That's sold in the U.S.?

14 MR. FIELDS: Yes.

15 MR. SORSHER: The anomaly is the fact that the natural  
16 line there is above the terrestrial fractionation line?

17 MR. SLATEN: Yes.

18 MR. FIELDS: If it was terrestrial fractionation, you  
19 would expect it to fall out along that line. And what  
20 we've seen is an excess in the amount of 0 -- in the 0-17  
21 isotope. So that's the 0-17 anomaly.

22 MR. SLATEN: Okay. So how do we get the sample?

23 What we have to do is pass groundwater through a  
24 mini-ion exchange column, where they use an ion exchange  
25 resin similar to the ones in use to clean up drinking

1 water, but we pass it through a small ion exchange column.  
2 We have to pass enough groundwater through there to get a  
3 sample of this -- some -- maybe some 20 milligrams or  
4 something sample.

5 So depending on what the initial concentration of  
6 the water going in is, it could -- we would have to pass a  
7 lot of water through this small, low volume ion exchange  
8 column.

9 Then after we get enough stuck to the ion  
10 exchange column, then they have to go back and try to get  
11 it to release off of there. Of course, this resin is built  
12 to be very -- have a high affinity for the perchlorate, and  
13 it sticks on there. So they got to rinse it off with some  
14 strong, nasty acid mixture.

15 So what we show here, I think, the -- is an  
16 initial -- just a little dirt trash filter on the bottom  
17 and then that ion exchange little throw-away column on the  
18 top that we try to concentrate enough perchlorate in out of  
19 each groundwater sample.

20 Any questions on that page?

21 MR. SORSHER: Just a comment, to put it in some  
22 perspective. I'm not real familiar with sampling for  
23 viruses and things like cryptosporidium spores, but they  
24 also have to filter large volumes of water to get their  
25 samples. So it's not unheard of to have to deal with this

1 kind --

2 MR. SLATEN: Yeah. That still -- it's going to be a  
3 problem for us, how we actually do that. Our wells --  
4 first of all, most of our monitoring wells are not set up  
5 to give us large volumes at one time. So it's going to  
6 take some time.

7 If we go -- when we go to other places where  
8 there's production wells, be easy enough to fill up a big  
9 tank and then take it off. So there's still issues to deal  
10 with just with the logistics of how we're going to do what  
11 we do.

12 MR. SORSHER: And the production wells, you've got the  
13 large screens which give you more of a mixture.

14 MR. SLATEN: Of course. We understand that too.

15 Next page.

16 MS. ARTEAGA: How are you going to dispose of all  
17 the -- you've got your 1,500 gallons left after your 20  
18 grams?

19 MR. SLATEN: Well, we have a nice water treatment  
20 plant sitting up right here on the hill. I think the  
21 logical thing to do is just put it in there and run it  
22 through the plant.

23 MS. FELLOWS: Inject over and contaminate ours,  
24 so if we ever do it later, we won't know.

25 MR. SLATEN: We could drink it.

1           MR. SORSHER: Everything goes through that reservoir  
2   so it's got to be pretty clean.

3           MR. SLATEN: It's got to be pretty clean, isn't it?  
4   Yeah.

5                     Okay. Next.

6                     Here are wells that we're proposing to get samples  
7   for. Some of our monitoring wells, which we hope will give  
8   us a good scattering of what's going on, both right here at  
9   the -- near the source, out a ways, at water supply wells  
10  and even upgradient valley water company wells.

11                    In addition, our new MW-25, which is down close  
12  to the Sunset area, we propose Garfield well, and then I  
13  think we need to get a background on Colorado River water  
14  as well.

15                    These have not been all looked at for viability  
16  of doing this. Depending on how difficult our other  
17  challenge it is to get, we may modify this, but this is  
18  what we thought was a good, wide initial look at which  
19  wells.

20                    For example, Valley Water Company, Rubio Cañon,  
21  Las Flores, we do not have access agreements with any of  
22  these. So we have to talk to these companies about taking  
23  these.

24                    For example, what we'll probably need to do is  
25  drive on-site with a pretty big truck, gather a large

1 volume of water, and then drive off-site to do the  
2 processing for analysis of the water. And legally, we  
3 don't want to drive a truck onto somebody's property until  
4 we have an agreement to do so, so we --

5 MR. BURIL: I have a question. I notice you have well  
6 No. 7 for us. We have never had any perchlorate in that  
7 water, but right 100 yards away or less than 100 yards  
8 away, Well 4, that we have had --

9 MR. SLATEN: Then maybe that's the one we need. Yeah.

10 MR. BURIL: I was just wondering how you picked that.

11 MR. FIELDS: It was a mistake. We wanted the well  
12 that had the perchlorate.

13 MR. SCHUMACHER: I noticed that in some of the  
14 documentation.

15 MR. SLATEN: Okay. So I still have -- we still have  
16 some logistical challenges. Like Colorado River water,  
17 where do we want to get that sample? You know, Met water,  
18 by the time it gets over here, I don't know what all has  
19 happened to it. So I was thinking I might have to take a  
20 field trip to Las Vegas --

21 UNIDENTIFIED SPEAKER: Las Vegas wash.

22 UNIDENTIFIED SPEAKER: Las Vegas wash.

23 MR. SLATEN: So we haven't thought through all the  
24 details yet of how this works out. And, you know, if  
25 people have ideas, we'll be glad to listen to them.



1                   Any other comments on this slide, Keith? Did I  
2 say enough about this one?

3           MR. FIELDS: I think so.

4           MR. SORSHER: Has MWD had any reaction or response to  
5 this study? Do they know it's going on?

6           MR. SLATEN: No. Mostly we're the ones that know this  
7 is going on, I think.

8           MS. FELLOWS: Do you know if they know, or have you  
9 talked to them at all?

10          MS. BABBITT: Probably not. Is it okay to mention it?

11          MR. SLATEN: Pardon?

12          MS. BABBITT: It is okay to mention it?

13          MR. SLATEN: Of course. Yeah. We don't do anything  
14 in secret here. If they want to kick in some money on  
15 it, you know, that's fine too.

16          MS. BABBITT: Never know.

17          MR. SLATEN: Might be more trouble than it's worth  
18 accepting any money from them but --

19          MR. SORSHER: I'm sure they have an interest in  
20 anything perchlorate.

21          MR. SLATEN: Well, I don't want to bog down our study  
22 going into a large cooperative, you know, trying to find  
23 partners for this or anything. We're trying to get  
24 something done here in a reasonable amount of time that I  
25 think we can do here. I don't mind working with people,

1     you know, to make things work for everybody better if  
2     they've got any ideas.

3                 So if you know of anybody else who has an  
4     interest or wants to look at the plan or can offer ways to  
5     make it better --

6                 MR. SORSHER: I don't know if they would help you get  
7     some Colorado River water.

8                 MR. SLATEN: We're going to have to go somewhere for  
9     the Colorado River water.

10                I was almost halfway being facetious about  
11     Las Vegas because all the taps in Las Vegas, that's all  
12     they have. You can go to any hotel and get Colorado River  
13     water.

14                MS. FELLOWS: About 1,500 gallons out of your hotels  
15     would be a little suspicious to me.

16                MR. SLATEN: Have to run a big hose out there so...  
17

18                MR. SLATEN: All right. Said enough on that slide,  
19     Keith?

20                MR. FIELDS: I think so.

21                MR. SLATEN: All right. I'm ready to leave talking  
22     about -- talking about the initial -- the additional  
23     investigations and talk about OU-1.

24                MR. SORSHER: Is it time for lunch?

25                MS. FELLOWS: What's our schedule?

1           MR. SORSHER: We're late for lunch.

2           MR. SLATEN: Are we?

3                    So -- yeah, we can break now and come back to  
4 this. We're fairly far through. We were talking about a  
5 tour, fitting a tour in here, so we'll probably get through  
6 a little early today since we've already gotten the tour  
7 done. But we can go catch some lunch and then finish up  
8 here.

9           MS. FELLOWS: Well, there's something to be said for  
10 getting in line early.

11          MR. SLATEN: Oh, that's true too. It does get pretty  
12 crowded close to noon there.

13          MR. FIELDS: We only have three slides left, I mean,  
14 if we want to sit --

15          MR. SLATEN: How do people feel? You want to try to  
16 get through here so we don't have to come back?

17          MS. FELLOWS: Yes.

18          MR. SORSHER: Sure.

19          MR. SLATEN: All right. Then everybody's motivated to  
20 move on. Okay. You saw it. We're done.

21                    Okay. We talked about all of this stuff. We're  
22 out there working on it now, trying to get it ready to go  
23 on. Inoculation happening. We're going to watch it  
24 closely for a while. We'll have people here on site,  
25 watching things happen for the next few weeks. Then we're

1 going to be putting it into a construction report to kind  
2 of document for posterity, what went on with construction,  
3 so we have good information to go into the record.

4 It's pretty.

5 All right. Soil vapor extraction, OU-2.

6 As you saw, I pointed out the operation of the  
7 unit that's moved over now to VE-01 is the location. We  
8 moved off of VE-02 in October -- or we turned it off  
9 October 21.

10 On that round, at that one we got back nine and a  
11 half pounds of carbon tet, and 7.1 pounds of TCE. Moved it  
12 back to VE-01 in mid-December, turned it on, and so far  
13 we've gotten less than a pound of carbon tet and 1/10 of  
14 a pound of TCE.

15 What that indicates to me is a diminished return.  
16 You would expect to get most of what you're going to get  
17 right when you turn it on, the first few days or weeks, and  
18 so I expect it to drop off from there.

19 So total, since we started, you know, we've  
20 gotten back a good return. It's been a worthwhile endeavor  
21 to get back 230 pounds of carbon tet out of the vadose zone  
22 so it won't continue to contribute.

23 Just the issue is, where do we go from here? How  
24 far -- how much more do we need to do.

25 So I think sometime in the next few months,

1 we'll probably be talking more about trying to plan the exit  
2 strategy for this so that -- what -- I have a preference  
3 not to have open things that don't need to be open and to  
4 try to reach closure.

5           And so maybe in the next year, we'll be talking  
6 about closing out the ROD for OU-2, declaring success, and  
7 then we can concentrate our time, energy, and money on the  
8 things that -- on the groundwater that we really need to do  
9 next.

10           We are spending a few hundred thousand dollars a  
11 year on this OU-2 system. It's not free. And once we've  
12 determined that it's appropriate to close it down, we'll  
13 talk about closing it down.

14           So that will be happening this year, talking it  
15 through.

16           Is that it, Keith?

17           MR. KEITH: That's it.

18           MR. SLATEN: Okay. If anybody's hungry, we're going  
19 to just --

20           MS. FELLOWS: I'm glad we didn't stop for lunch.

21           MR. BURIL: Keith, there was a picture that had a map.

22

23           MR. SLATEN: That is -- that is the Raymond Basin  
24 model. We put it up here for discussion purposes.

25           What I'd like to make -- just a general comment

1 on that is, you know, we understand what the model says,  
2 and it's similar to what we understand for a particle, you  
3 know, backtracking model.

4 I think the Raymond Basin has a few different  
5 parameters than we would have chosen. We're still trying  
6 to understand everything that went into it. It probably  
7 shows groundwater moving a little faster.

8 If I -- if I were to guess what the reality is  
9 that the lines spread out a little more and capture a  
10 little more area, and the flow is not quite as fast. But  
11 this is still within the realm of possibility.

12 So I don't have much more to say than this is  
13 another tool, one of many tools. I don't believe this is a  
14 fine -- you know, this by itself is not a final definition  
15 of what's going on.

16 MR. FIELDS: What would be a nice outcome of the  
17 isotopes study would be to refine this model to a degree  
18 where it's a little more accurate with the age dating and  
19 water typing and understanding so that we have a better  
20 model of what's going on in the subsurface.

21 MR. BURIL: Which wells have been the ones out there  
22 in the eastern area showing perchlorate detections?

23 MR. TAKARA: 58, there to your right, there we go,  
24 Monte Vista, and those are the only two I know of.

25 MR. BURIL: Okay.

1           MR. SLATEN: What is important up here locally, you  
2 know, is I think we believe most -- most of the flow that  
3 goes south of JPL originates in La Cañada area that heads  
4 on down into the main part of the basin. Most of the flow  
5 that occurs locally is captured in the Monk Hill that  
6 originates underneath JPL, if you are to be able to zoom  
7 in, sort of up in that -- a lot going on up there.

8           But as most -- it fits our belief that most of  
9 the capture from JPL has been captured in the Monk Hill.  
10 And we have seen, you know, the chemicals from La Cañada  
11 zooming on past now through the Arroyo, just outside of our  
12 chemicals.

13          MS. FELLOWS: What's the difference between Pasadena  
14 sludge ponds and Arroyo Seco spreading ground?

15          MR. TAKARA: They're the same. Sludge ponds were used  
16 originally as -- to catch a lot of the sludge area. Sludge  
17 ponds used to capture the sludge from our vadose treatment  
18 plant --

19          MS. FELLOWS: Oh, okay.

20          MR. TAKARA: -- and converted that to spreading --  
21 spread ponds.

22          MR. SLATEN: I mainly put that up there so that we'd  
23 have something to look at when we're talking about well  
24 locations and just generalized groundwater flow. We don't  
25 need to dissect -- I prefer not to try to dissect it today.

1 It's a pretty picture, though.

2 Also, it shows where we're trying to locate our  
3 monitoring wells to the south is an important area that we  
4 need more definition of the new well.

5 MR. FIELDS: I should say this is not NASA. This is  
6 GeoScience data --

7 MR. SLATEN: It is.

8 MR. FIELDS: -- which they are doing work for the  
9 Raymond Basin Management Board associated with the  
10 conjunctive use primarily.

11 MR. SORSHER: Where are the new monitoring wells  
12 located on this?

13 MR. FIELDS: MW-25 is right there. Twenty-six will be  
14 in this area (indicating).

15 So, you know, this is good to look at this kind  
16 of data to help us site our wells and the wells do  
17 correlate. We did try to match those up to where the flow  
18 pass appears to be.

19 MR. SLATEN: Anybody hungry?

20 MS. FELLOWS: Want to pick the next meeting?

21 MR. SLATEN: Okay. We put this one out to mid -- to  
22 mid-January just because of the holidays, mid or late.

23 The next proposed date we have now, just to try to  
24 get us out about a month, February 17th, is a  
25 teleconference.



1 MR. SORSHER: A Thursday?

2 MR. SLATEN: Probably.

3 MS. FELLOWS: Can you pick another day besides

4 Thursday?

5 MR. SLATEN: When is the next holiday that occurs

6 during February?

7 UNIDENTIFIED SPEAKER: It's Presidents Day.

8 MR. SLATEN: Do we know the date?

9 UNIDENTIFIED SPEAKER: 21st.

10 MR. SLATEN: 21st. Do we want to move it up to a

11 Wednesday or something?

12 MS. FELLOWS: It helps for me, but I need to drive the

13 whole thing.

14 MR. SLATEN: 21st is a holiday.

15 MR. FIELDS: How about the 16th?

16 MR. SLATEN: Fine.

17 MS. FELLOWS: How about for Mark?

18 MR. SLATEN: Okay. I'll be send- --

19 MR. SORSHER: 16th.

20 MR. SLATEN: Yes. 16th. I'll send out a notice,

21 couple weeks.

22 MS. FELLOWS: Are the court reporters finished now?

23 MR. SLATEN: I think we're all finished. Thank you.

24 (At 11:28 a.m., the proceeding were concluded.)

25 -o0o-

1     STATE OF CALIFORNIA             )  
  )     ss.  
2     COUNTY OF LOS ANGELES         )

3

4             I, ANN BONNETTE-SMITH, C.S.R. No. 6108, do hereby  
5     certify:

6             That said Transcript of Proceedings was taken before  
7     me at the time and place therein set forth and was taken  
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12            I further certify that I am neither counsel for nor  
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14    interested in the outcome thereof.

15            IN WITNESS WHEREOF, I have hereunto subscribed my  
16    name this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

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